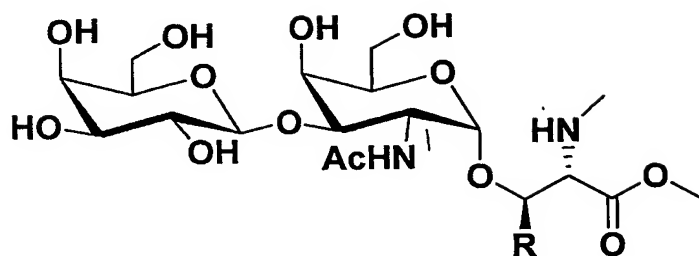


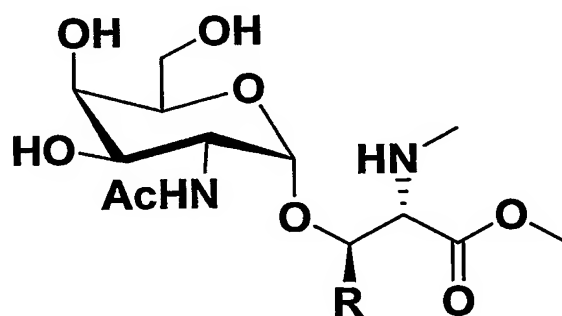
1/18

Figure 1 A



T (Thomsen-Friedenreich)
Gal β 1-3GalNAc α 1-OSer/Thr

Figure 1 B



T_n (T nouvelle)
GalNAc 1-OSer/Thr

FIGURE 2

T-Antigen and Metastasis

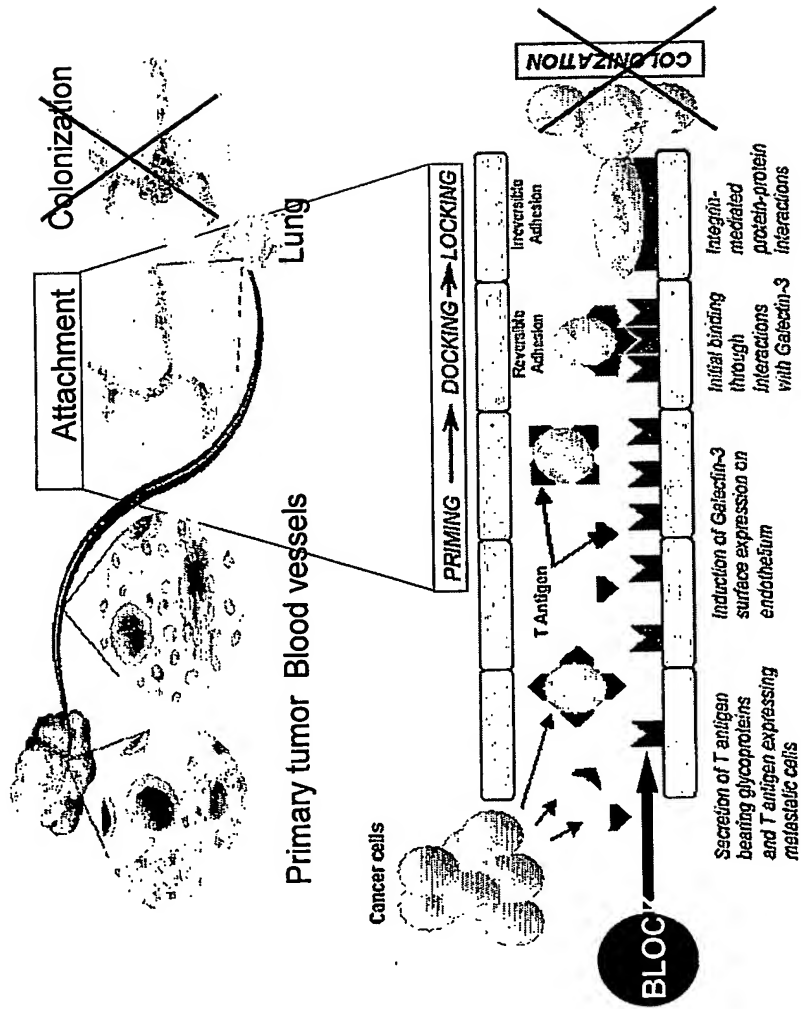
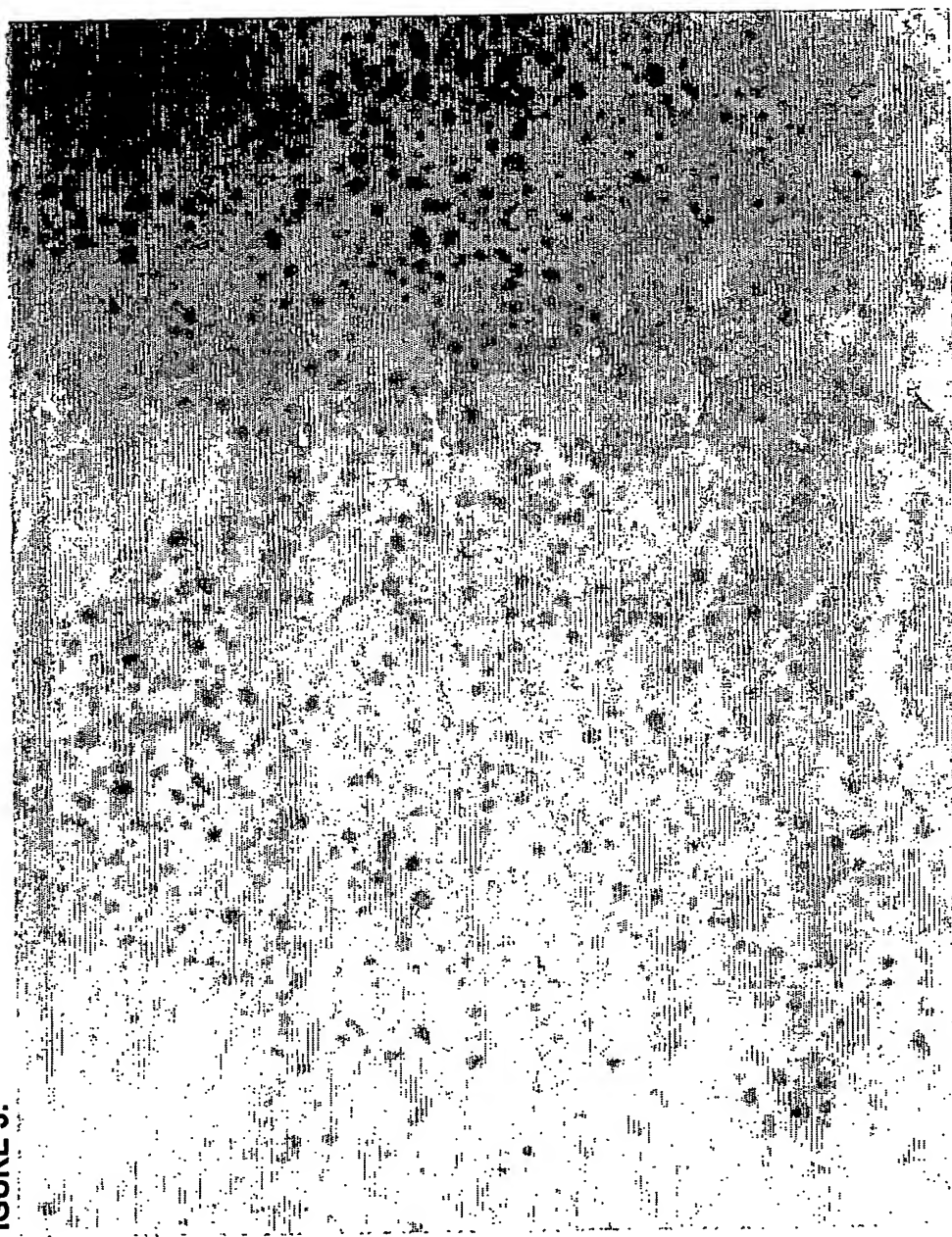
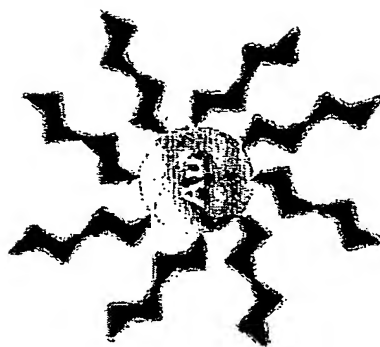


FIGURE 3:



4/18

FIGURE: 4
AQUEOUS PROCESS



Reductant \longrightarrow

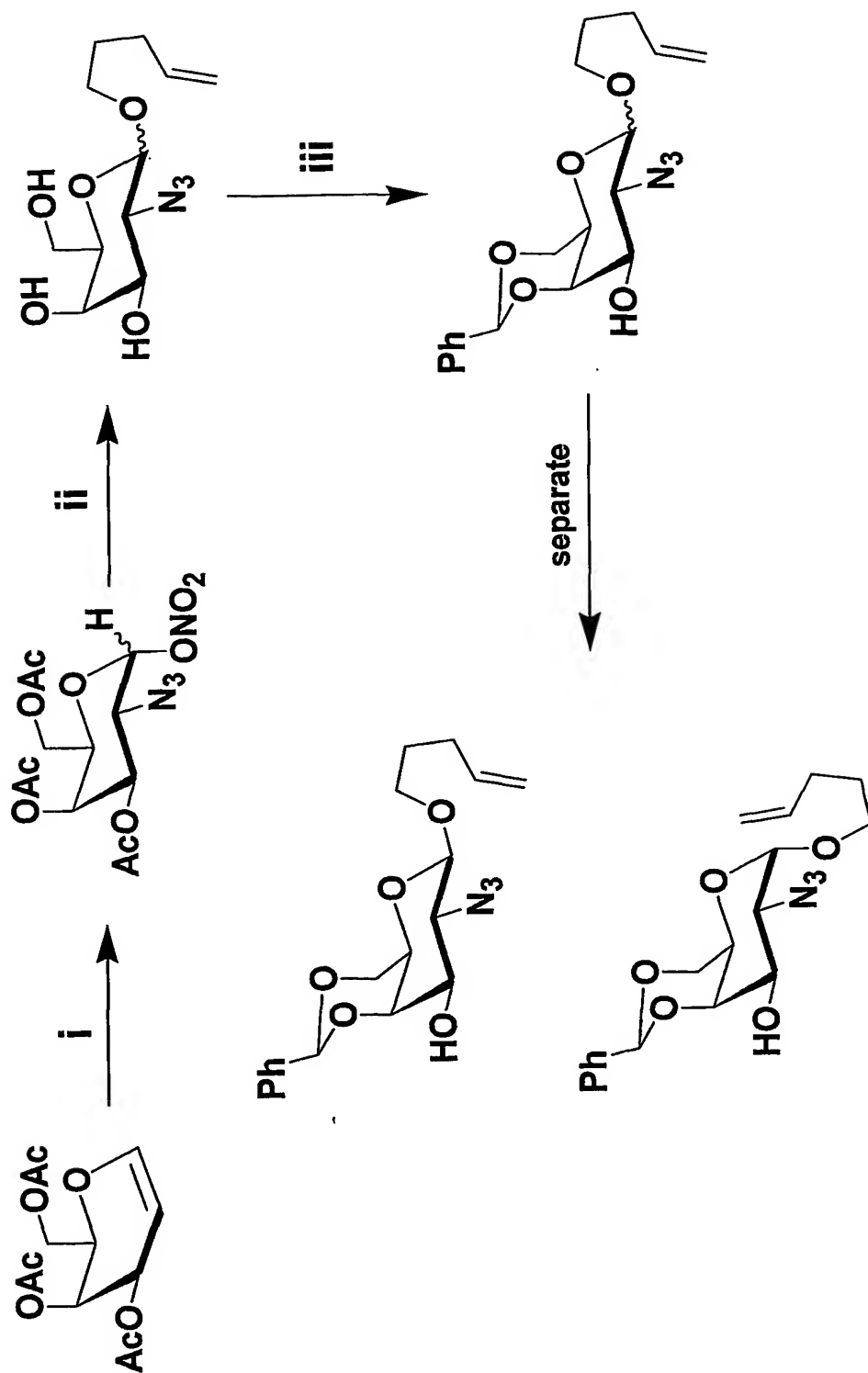


R = water soluble biomolecule

5/18

FIGURE: 5

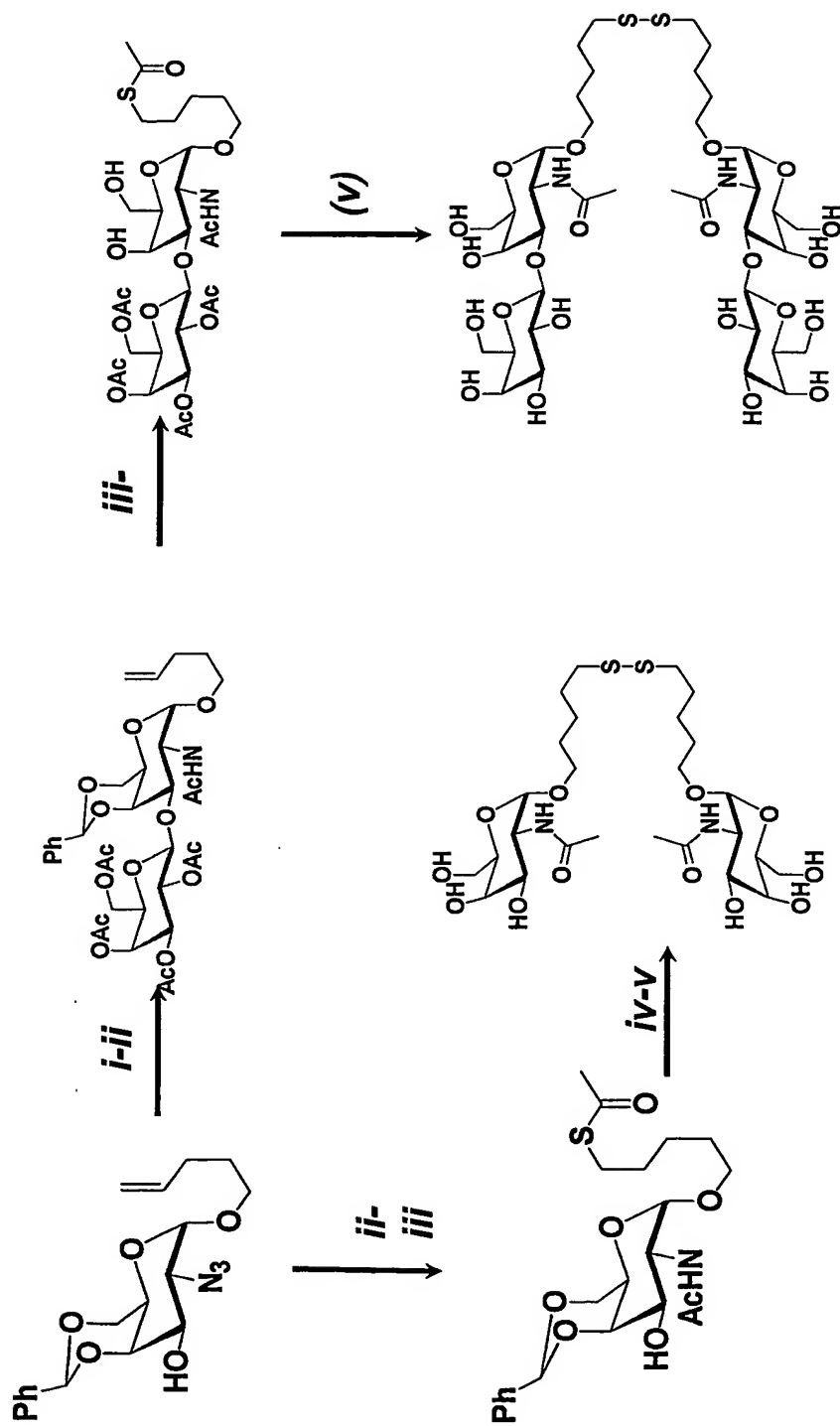
T-ANTIGEN SYNTHESIS



Reaction conditions: (i) $\text{NaN}_3/\text{CAN}/\text{MeCN}$, 59-65%; (ii) $\text{Na}/\text{CH}_2=\text{CHCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$, 99%; (iii) $\text{PhCH}(\text{OMe})_2/\text{PTSA}/\text{MeCN}$, 70%;

FIGURE 6

PENTENYL GROUP DERIVATIZED FOR CONJUGATION



Reaction conditions: (i) Gal-TCl, TMSOTf/CH₂Cl₂/MS, 90%; (ii) Zn, AcOH, Ac₂O, THF, 90%; (iii) 80% AcOH, 83%; (iv) AcSH/AIBN/1,4-dioxane, quant.; (v) cat. NaOMe/MeOH, 97%;

7/18

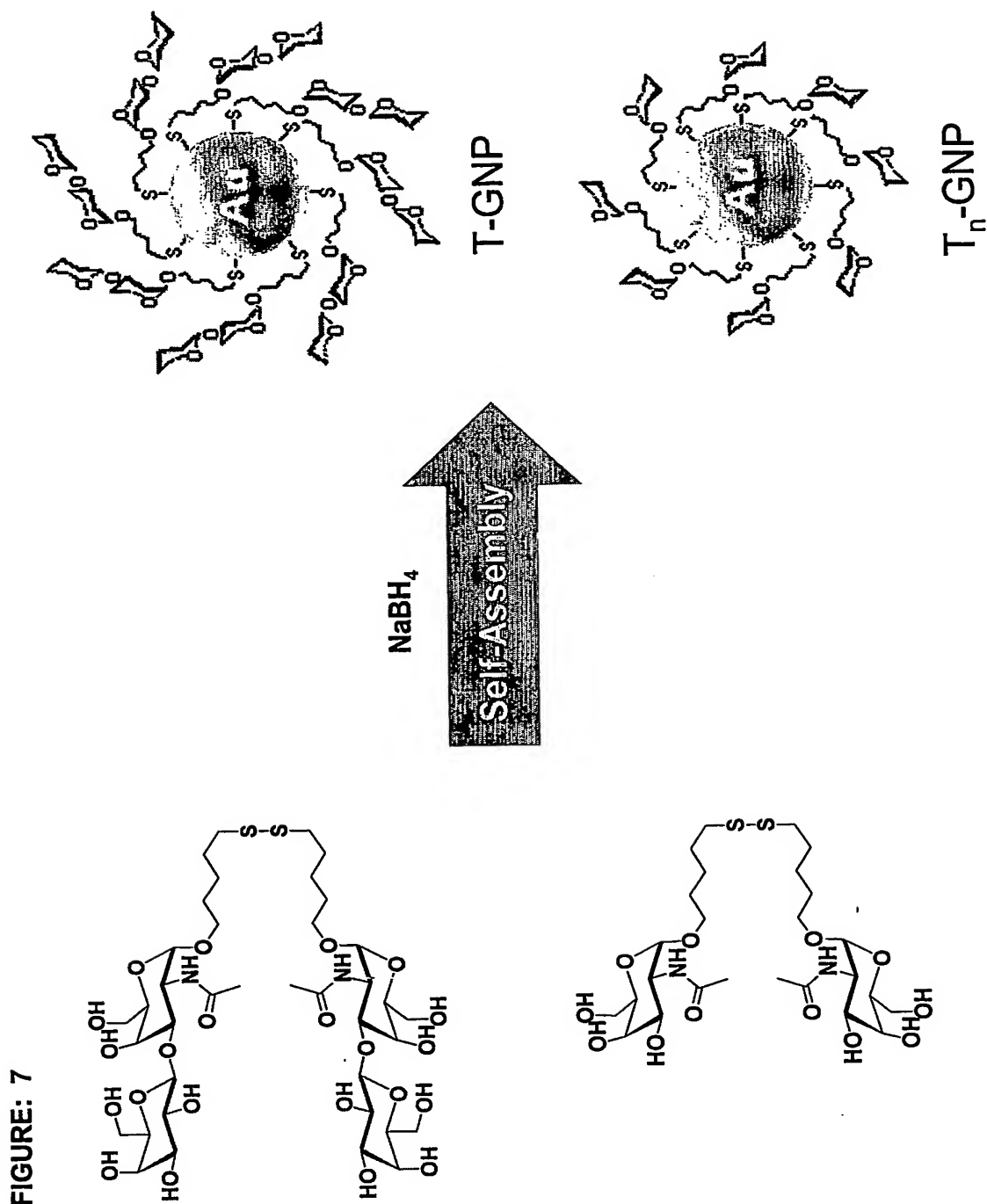
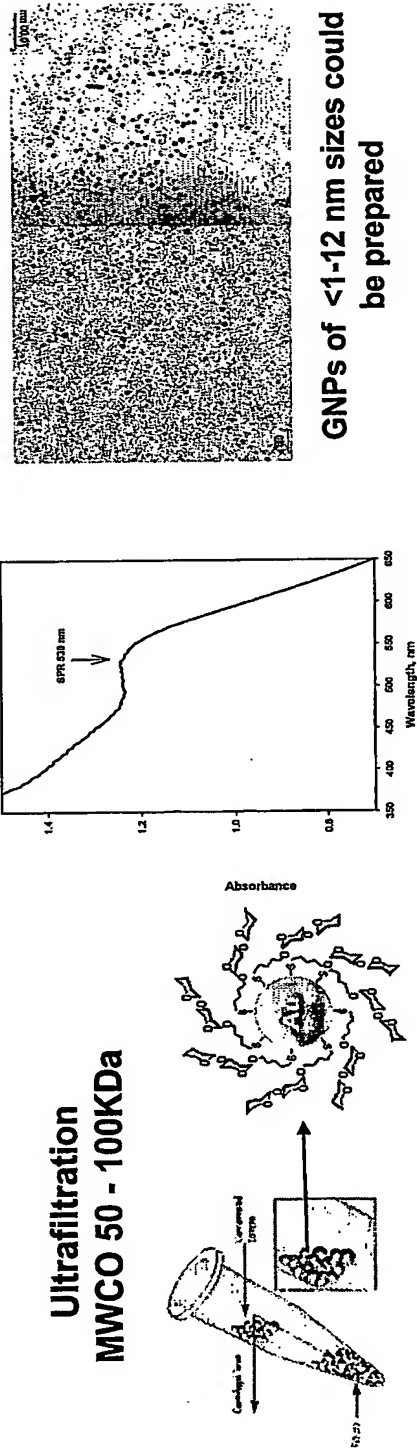


FIGURE: 8
PURIFICATION AND CHARACTERIZATION OF GNPs



GNPs of <1-12 nm sizes could be prepared

Elemental Analysis and sizing data indicates ~90 sugars on 2 nm particles

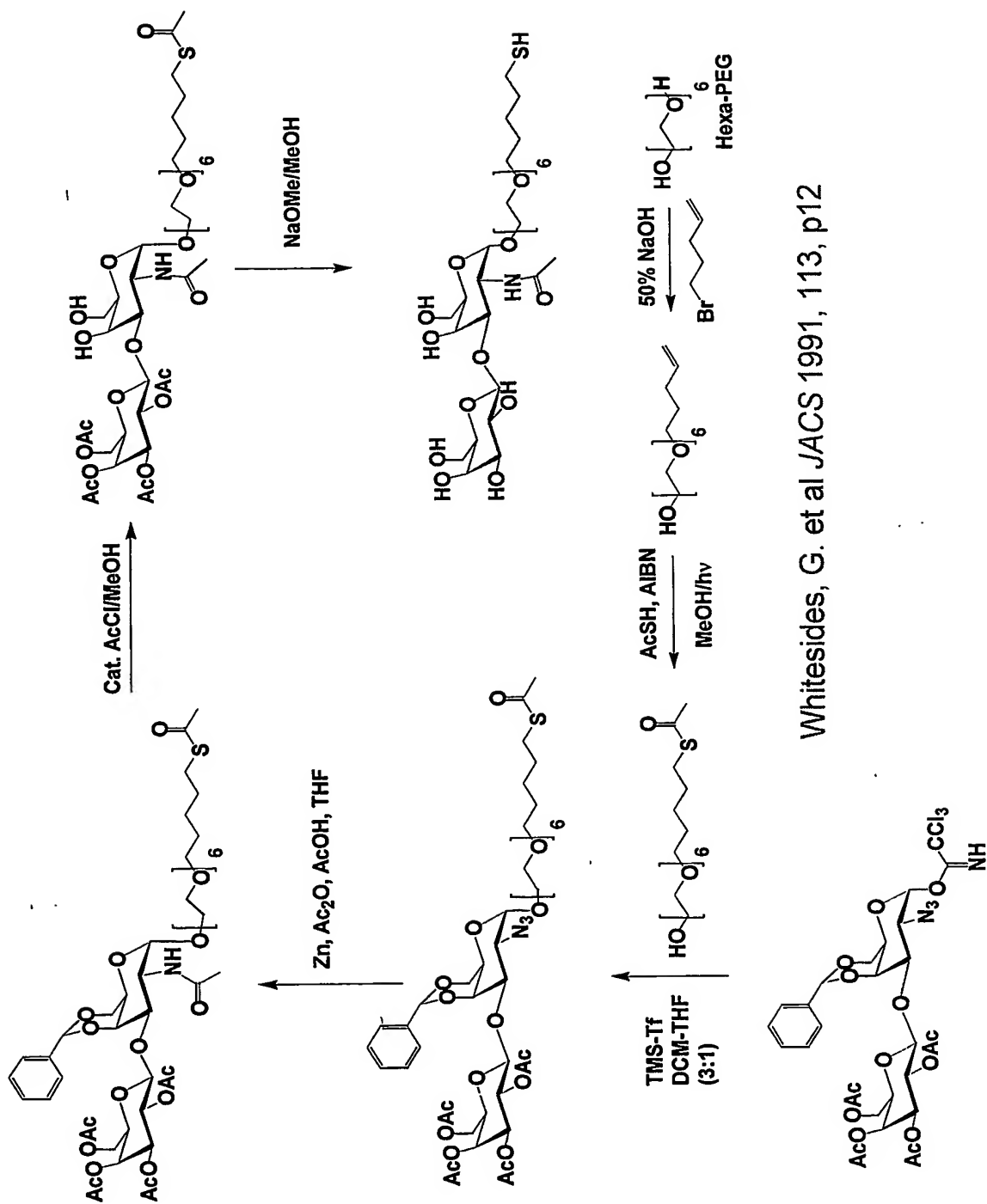
ANALYSIS RESULTS	
Carbon	12.34 %
Hydrogen	2.33 %
Nitrogen	0.86 %
Gold	44.78 %

DYNAMIC LIGHT SCATTERING ANALYSIS OF GNPs

Hydrodynamic diameter:	6.5nm
Molecular weight:	73,500 Da
Shape:	Spherical

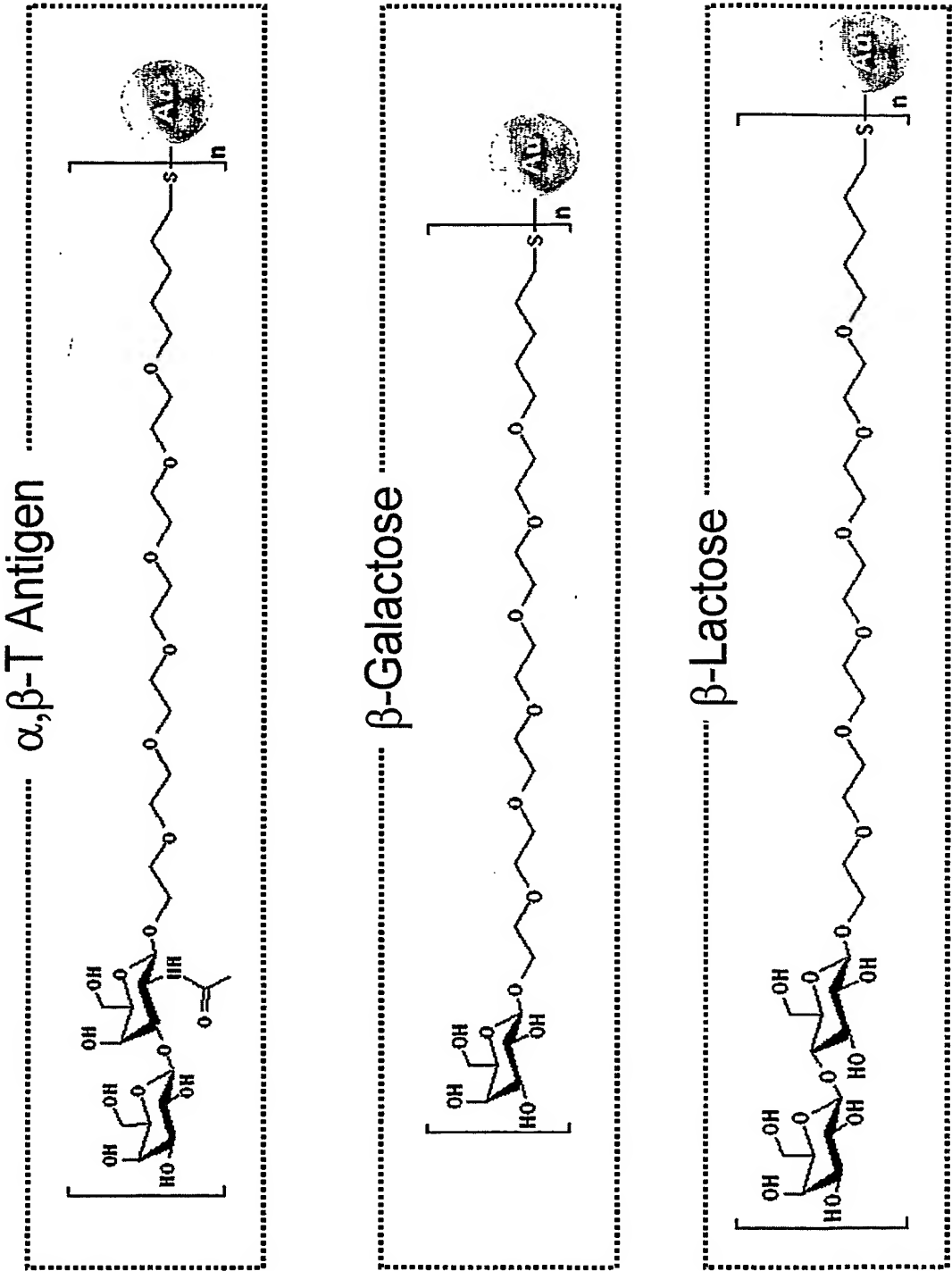
9/18

FIGURE: 9
SYNTHESIS OF PEG-LINKED T-ANTIGEN



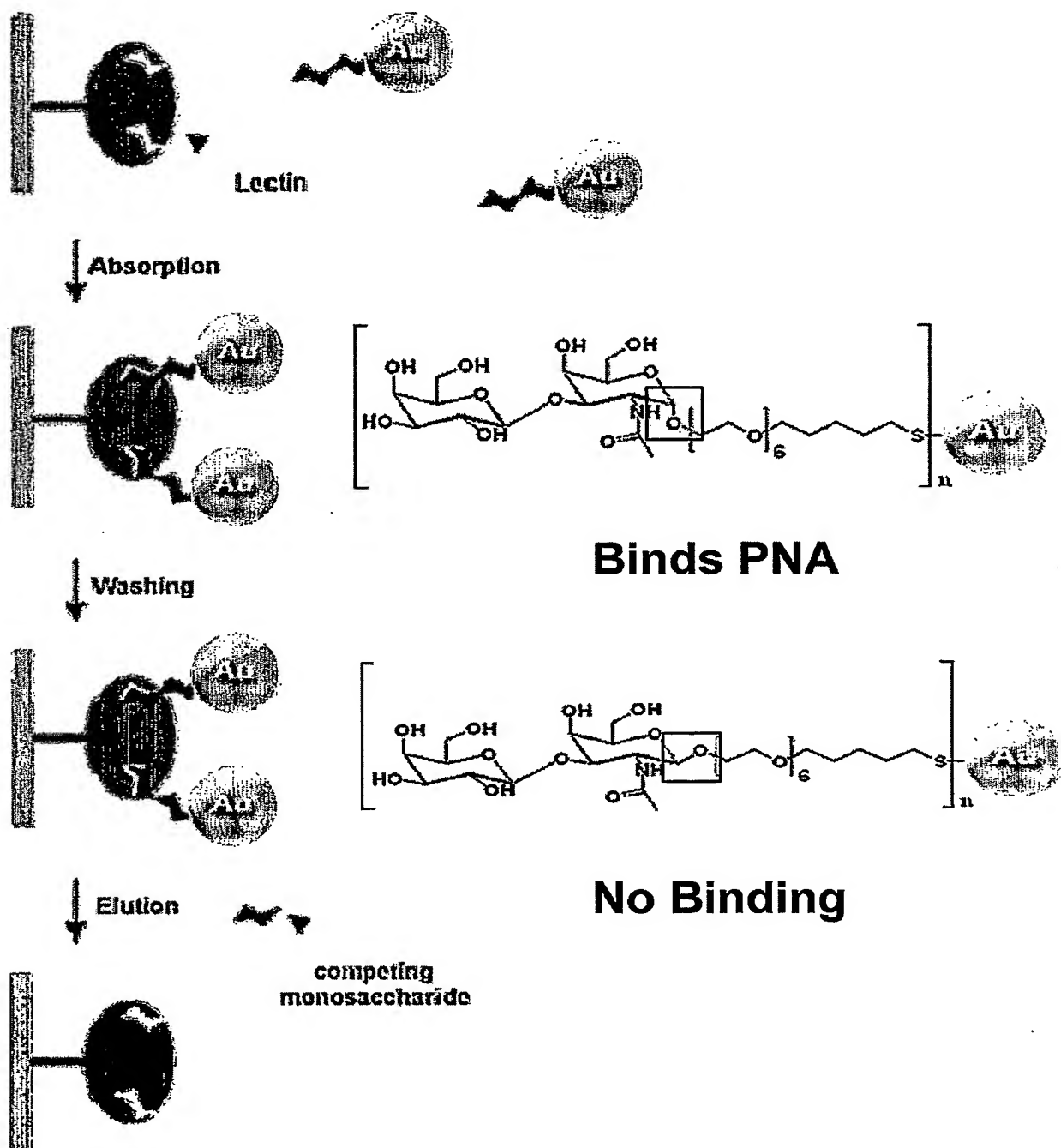
Whitesides, G. et al JACS 1991, 113, p12

FIGURE: 10



11/18

FIGURE: 11
***IN VITRO* BIOFUNCTIONALITY IS INTACT**
Lectin Affinity Chromatography Assay shows stereospecificity of T-ag
gold- Peanut agglutinin interaction



12/18

FIGURE: 12
IN VITRO BIOFUNCTIONALITY IS INTACT
Rhodamine-Lectin Agglutination Assays
***PISUM SATIVUM* (PSA) vs *PEANUT* AGGLUTININ (PNA)**

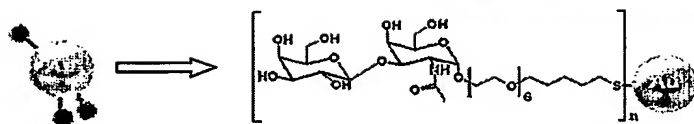
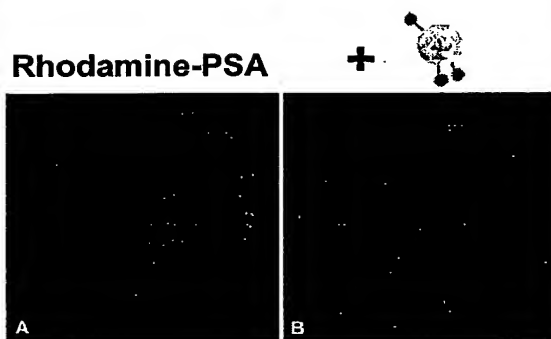
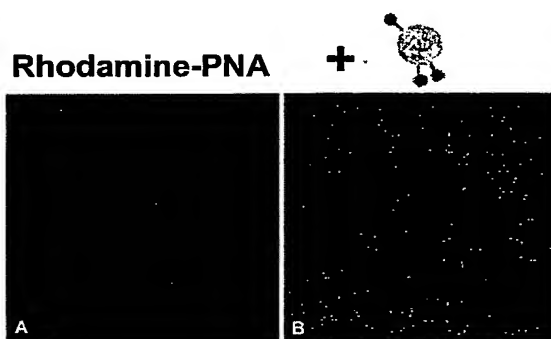
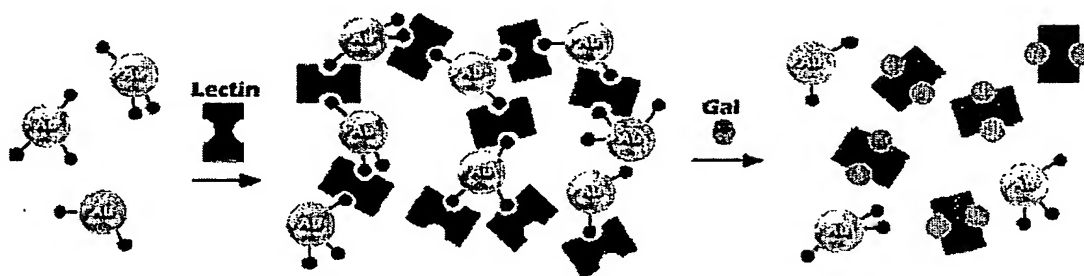
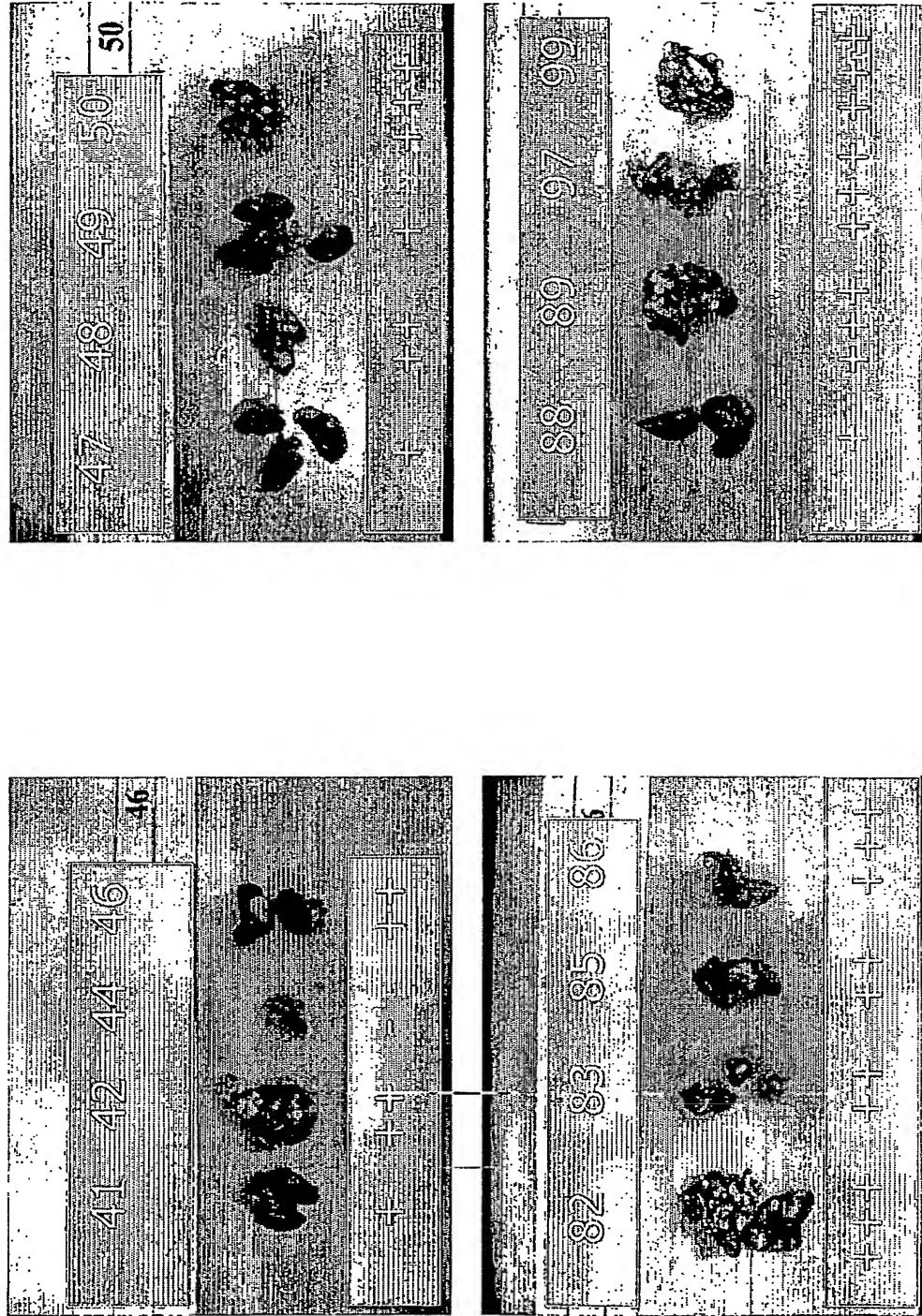


FIGURE: 13

PBS – Lungs



14/18

T Ag Gold Lungs



FIGURE: 14

15/18

FIGURE: 15

Metastasis Levels on Lungs
 (+++: 10~20, ++: 5~10, +: 0~5, -: 0)

	PBS	JAA-F11	T Ag Au
+++	6/16 (37.50%)	3/19 (15.79%)	0/3 (0%)
++	5/16 (31.25%)	2/19 (10.53%)	1/5 (20%)
+	4/16 (25.00%)	4/19 (21.05%)	0 (0%)
-	1/16 (6.25%)	10/19 (52.63%)	4/5 (80%)

FIGURE 16

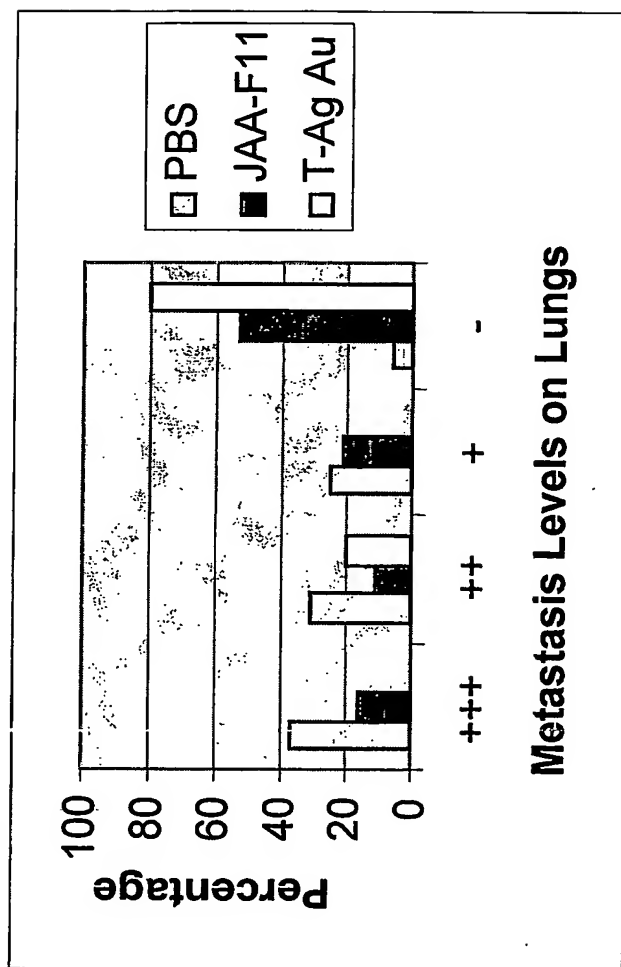
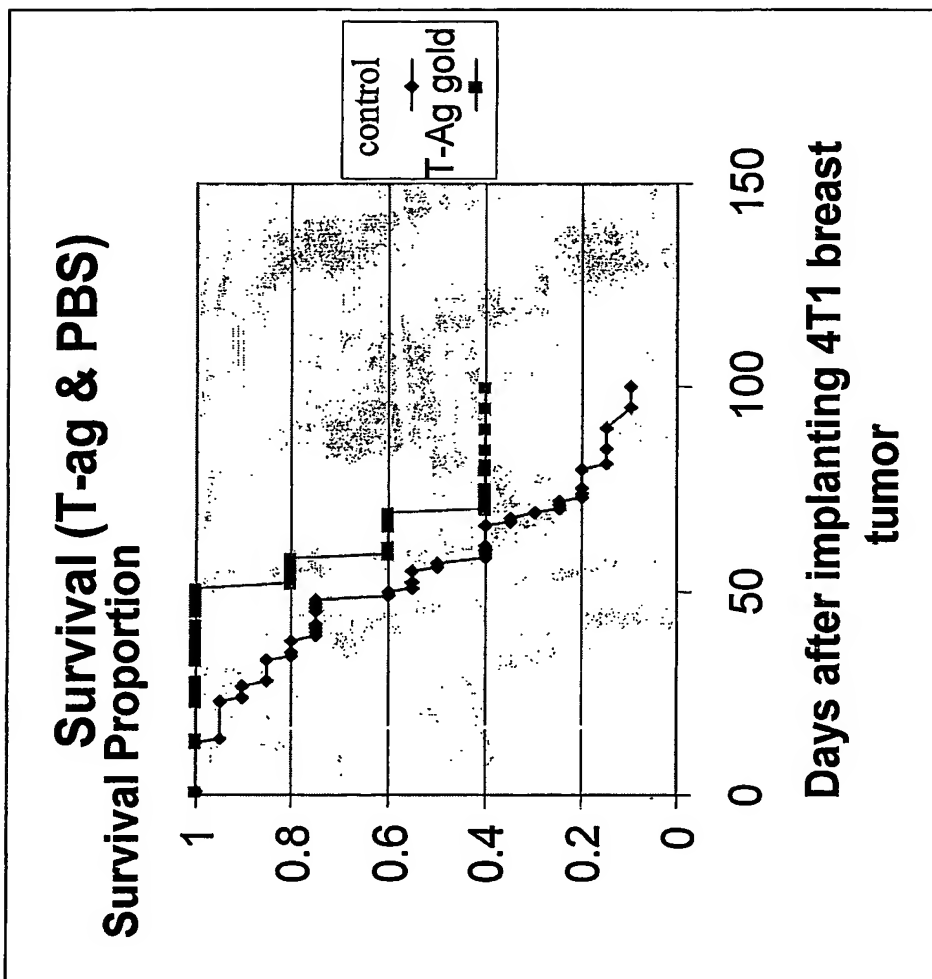


FIGURE: 17



18/18

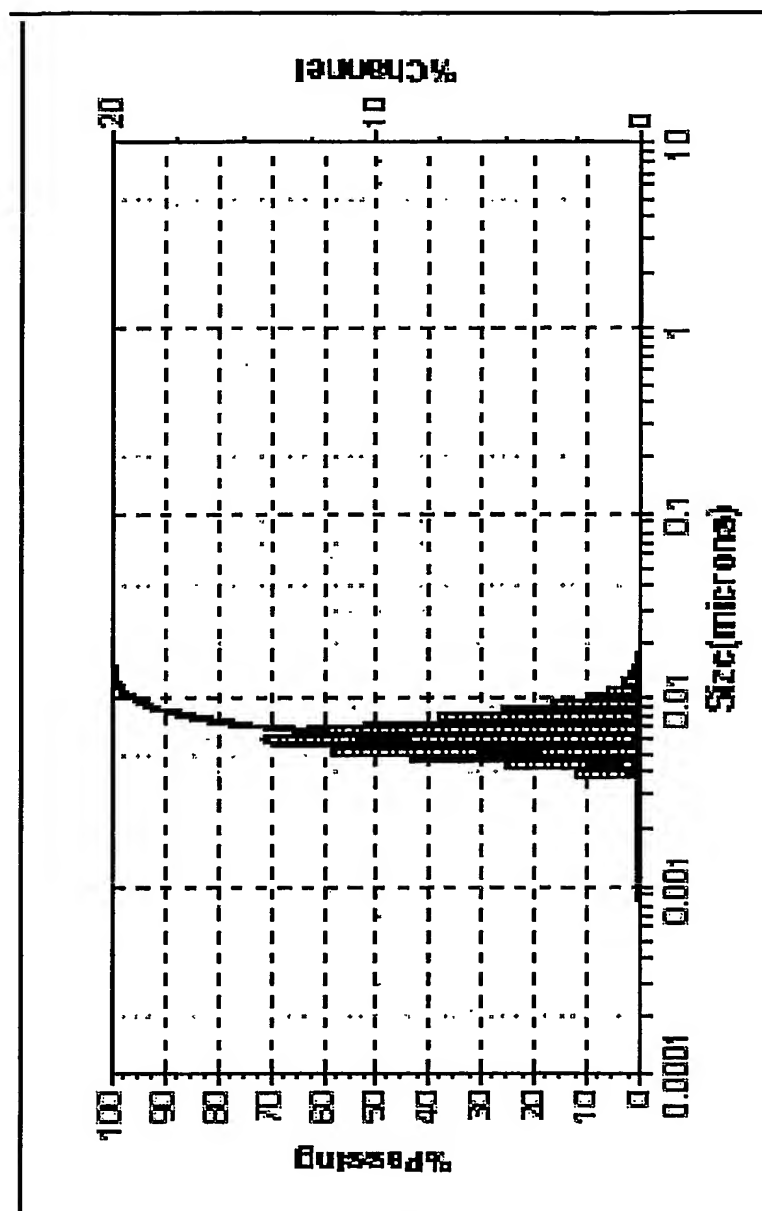


FIGURE 18